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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/583,709	04/06/2007	Andrew Stuart Overend	066079-5136	7140
9629 7590 07/06/2009 MORGAN LEWIS & BOCKIUS LLP 1111 PENNSYLVANIA AVENUE NW WASHINGTON, DC 20004			EXAMINER NGUYEN, VU ANH	
			ART UNIT 1796	PAPER NUMBER
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/583,709	Applicant(s) OVEREND ET AL.	
	Examiner Vu Nguyen	Art Unit 1796	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 May 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7,9 and 12-19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7, 9 and 12-19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

1. Acknowledgement is made of the Amendment to the Specification, filed 05/07/2009. Claims 1-7, 9 and 12-19 are pending in this application.

Claim Objections

2. Claim 1 is objected to because of the following informalities: In line 2, the value "30m Pa·s" should be changed to "30 mPa·s". Further, the Markush group in part b) is in improper format. Markush group should be "selected from the group consisting of....and...." or "selected from....or..." Appropriate correction is required.

Claim Rejections - 35 USC § 101/112

3. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claim 14 provides for the use of the ink of claim 1 as an ink jet ink, but, since the claim does not set forth any steps involved in the method/process, it is unclear what method/process applicant is intending to encompass. A claim is indefinite where it

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merely recites a use without any active, positive steps delimiting how this use is actually practiced.

Claim 14 is rejected under 35 U.S.C. 101 because the claimed recitation of a use, without setting forth any steps involved in the process, results in an improper definition of a process, i.e., results in a claim which is not a proper process claim under 35 U.S.C. 101. See for example *Ex parte Dunki*, 153 USPQ 678 (Bd.App. 1967) and *Clinical Products, Ltd. v. Brenner*, 255 F. Supp. 131, 149 USPQ 475 (D.D.C. 1966).

Claim Rejections - 35 USC § 112

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims 1-7, 9 and 12-19 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

8. In the independent claim 1, the recited formula has $\sin 60$ and $\tan 60$. It is not clear whether the "60" is in units of radian or degree. In the followings, the units of degree are assumed.

Claim Rejections - 35 USC § 102

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

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(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

10. Claims 1, 3, 6, 7, 9 and 13-19 are rejected under 35 U.S.C. 102(a) as being anticipated by Ishizuka et al. (US 2004/0010052).

11. Corresponding to the limitations set forth in these claims, Ishizuka et al. (Ishizuka, hereafter) teaches a radiation-curable ink composition comprising an oil-soluble dye as colorant and a mixture of polymerizable monomers. In one example (Example 3 in [0314-0315]), the ink contains 3 wt% of a dye, photoinitiators, a stabilizer, and a mixture of polymerizable monomers made of 39 parts of pentaerythritol tetraacrylate, 35 parts of dipentaerythritol hexaacrylate, 9 parts of ethylene glycol diacrylate and 6 parts of diethylaminoethyl acrylate. When these numbers are inserted in the formula (1) of claim 1, the result is 44.22. In the above example, the ink is substantially free of an organic solvent. Further, the ink is filtered through a 0.45 μm filter. Although the ink in this example contains photoinitiators (for use with UV or visible radiation), Ishizuka does include embodiments where the ink is free of a photoinitiator and is cured by electron beams. For instance, it discloses that the radiation can be α -rays, γ -rays, X-rays, UV rays, visible rays, and electron beams [0024] and that "in the case where ultraviolet rays or visible rays are used as the radiations, a photopolymerization initiator for initiating the polymerization is used in combination." [0025]. Beside the diethylaminoethyl acrylate employed in the above example as a monofunctional monomer, other monofunctional monomers can be used, which include some of the claimed species such as 2-hydroxyethyl acrylate, dicyclopentenyl acrylate and dimethylaminoethyl acrylate [0032]. The ink has a viscosity of 10-80 mPa·s [0259].

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Since this viscosity is most likely measured at ambient temperature and since viscosity tends to decrease with increasing temperature, Ishizuka clearly includes inks having an inherent viscosity at 60°C of less than 30 mPa·s. The monomers in claims 6 and 7 are also taught [0030]. In general, the content of the dye in the ink is 0.2-6 wt% [0240]. The ink is used for ink jet printing on numerous substrates wherein the printed images are cured by the selected radiation [0260-0265]. It is noted that many of the disclosed inkjet printer types [0263] are equipped with ink cartridges for storing inks.

Claim Rejections - 35 USC § 103

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

13. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

14. Claims 1-3, 5, 7, 9, 12 and 14-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Caiger et al. (US 6,586,492).

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15. Regarding the limitations set forth in these claims, Caiger et al. (Caiger, hereafter) teaches a radiation-curable ink jet ink composition having a viscosity less than 25 mPa·s at a temperature between 40-130°C (Abstract). The radiation includes electron beam and UV radiation (col. 4, lines 60-65). The ink comprises, as major components, a pigment and a mixture of polymerizable materials. In one example (col. 6, Table, Example 7), the ink, having a viscosity of 110 mPa·s and 17.0 mPa·s at 25°C and 90°C, respectively, contains 8 wt% of a pigment, photoinitiators, coinitiator, wax, thickener, surfactant, and a mixture of 10 wt% of isobornyl acrylate, 30 wt% of ethoxylated neopentyl glycol diacrylate and 37.3 wt% of ethoxylated trimethylolpropane triacrylate. This mixture gives a value of 58.6 according to the formula (1) in claim 1. The ink is essentially free of an organic solvent. The pigment includes red, blue, green, yellow, white and black pigments (col. 6, lines 15-19).

16. It is clear that Caiger teaches all the limitations set forth in these claims but fails to teach an ink essentially free of a photoinitiator. Nevertheless, since Caiger clearly suggests that the incorporation of a photoinitiator is not absolutely necessary as it is disclosed that "many radiation curable components require the presence of a photoinitiator" (col. 4, lines 60-65) and since it is well known in the art that polymerization can occur readily without an initiator when a high-energy light source such as a electron beam is used, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to have modified the composition taught by Caiger by (1) employing a high-energy light source such as

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electron beam and (2) doing away with the photoinitiators so that the curing of the printed mages is effective while the cost of the initiators can be avoided.

Allowable Subject Matter

17. Claim 4 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

Response to Arguments

18. Applicant's arguments, see Remarks (pages 4-8), filed 05/07/2009, with respect to the rejection(s) of claim(s) 1-7, 9 and 12-19 under 35 U.S.C. 102(b) as anticipated by Johnson et al. (WO 99/29788) have been fully considered and are persuasive.

Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of the newly found prior art references as shown above. Specifically, since claim 1 recites a formula having the terms "sin 60" and "tan 60" and since a unit for the value "60" is not given anywhere in the disclosure, the examiner naturally assumed the unit of radian, hence the rejection based on Johnson. Upon further review of the specification, the value "60" is implicitly given the unit of degree in one example in the specification.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Vu Nguyen whose telephone number is (571)270-5454. The examiner can normally be reached on M-F 7:30-5:00 (Alternating Friday Off).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu can be reached on 571-272-1114. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/David Wu/
Supervisory Patent Examiner, Art Unit 1796

Vu Nguyen
Examiner
Art Unit 1796